Vol. X DECEMBER, 1899 No. 12

The National Geographic Magazine

AN ILLUSTRATED MONTHLY

CONTENTS

WASHINGTON
PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY
For Sale at Brentano's
31 Union Square, New York; 1815 Pennsylvania Avenue, Washington;
156 Wabash Avenue, Chicago; 37 Avenue de l'Opéra, Paris

Price 25 Cents — SINGLE COPY — $2.50 a Year

Entered at the Post-office in Washington, D. C., as Second-class Mail Matter.

THE

National Geographic Magazine

VOL. X DECEMBER, 1899 No. 12

THE WELLMAN POLAR EXPEDITION

By WALTER WELLMAN

The Wellman Polar Expedition of 1898–'99 had two purposes in view. One of these was to finish the exploration of Franz Josef Land, and the other was to make an approach, by means of what is known as "a dash," near or to the North Pole. Incidentally to both these efforts scientific work of the usual character was to be carried on by a competent corps of observers. The expedition was aided in a financial way by the National Geographic Society, by President Jesup of the American Museum of Natural History, by President McKinley, Secretary of State Hay, J. Pierpont Morgan, W. K. Vanderbilt, William C. Whitney, Richard Olney, and other well-known public men. The cost of the expedition was about $27,000, of which sum $12,000 was subscribed by the various contributors.

June 26, 1898, the expedition sailed from Tromsö, Norway, in the ice-steamer *Frithjof*. Aboard were nine members of the expeditionary party—four Americans and five Norwegians. Prof. James H. Gore, of Washington, who had planned to accompany the expedition to Franz Josef Land for a summer's work in geodesy, was unable to go beyond Tromsö on account of the danger that the ship might not get back in time to enable him to meet imperative engagements. Calling at Archangel, Russia, the *Frithjof* took aboard a pack of 83 Siberian dogs which had been brought from the Ob river by Alexander Trontheim, a trustworthy Russian, who has now supplied three Arctic expeditions with draught dogs purchased from the Ostiak tribes. In order to deliver his pack according to contract, Trontheim had to make

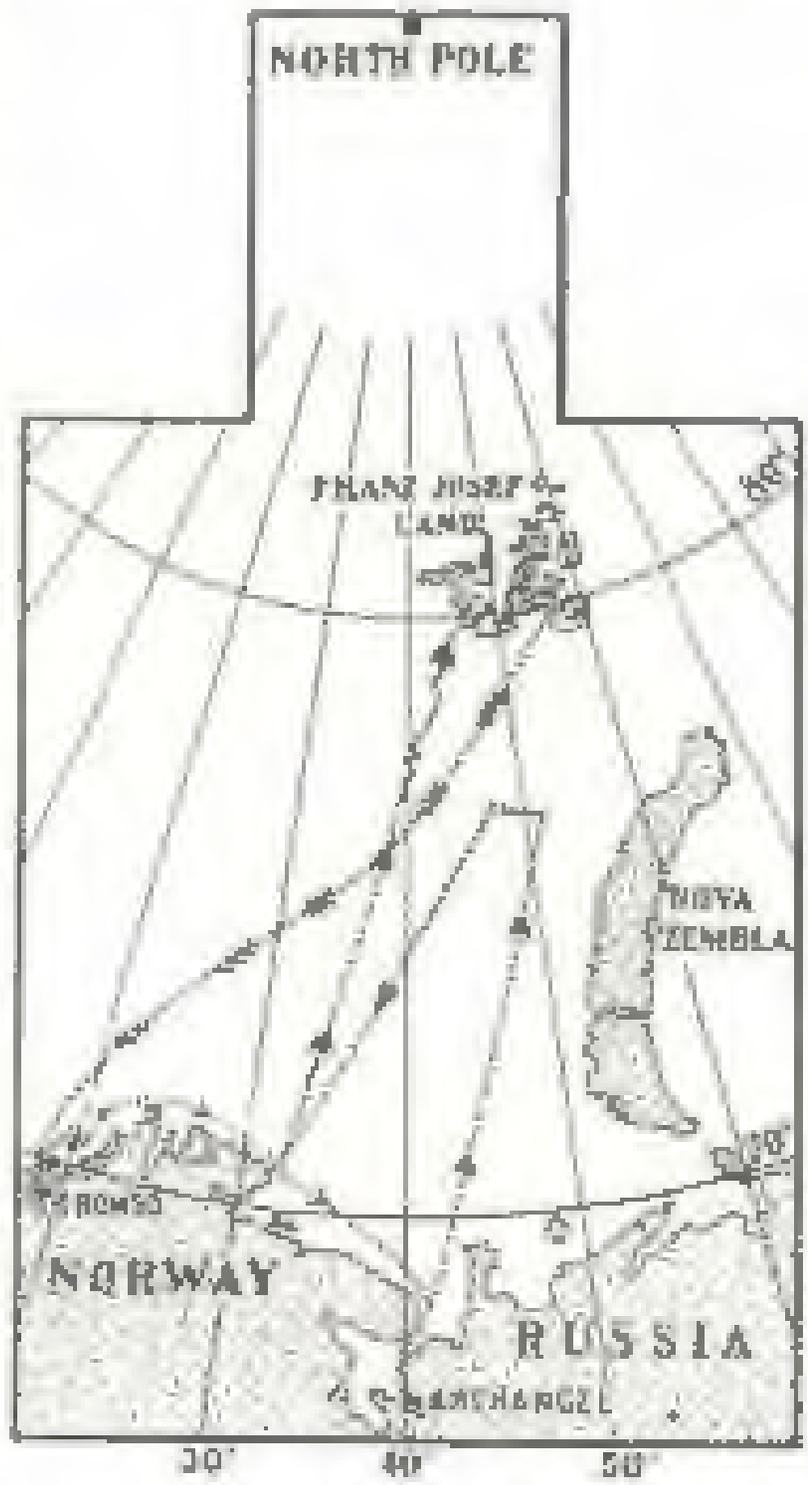
a 2,000-mile journey over the Ural mountains, across the plains and tundra, fording swollen rivers and wading deep swamps. Material for house-building was also taken on at Archangel, and the *Fridtjof* then steamed northward. The pack-ice was met at about the 77th parallel of latitude July 9, and three days later, the supply of coal running short, it was deemed prudent to run back to Norway for more fuel. July 20 the ship was again at the ice edge, and after a week of ramming through loose floes and searching for open leads found a clear waterway, in which such rapid progress was made that the ice-capped mountains of Franz Josef Land were visible from the crow's-nest July 27.

Next day the *Fridtjof* was at Cape Flora, which for three years had been the headquarters of the Jackson-Harmsworth (English) expedition, and where Nansen and Jackson had had their memorable meeting in June, 1896, a chance encounter which doubtless saved the lives of the Norwegian explorer and his comrade. It had been the first plan of our expedition to make Cape Flora our winter quarters, and we had secured from Mr Harmsworth the privilege of making such use as we wished of the house and stores there. It appearing that there was a possibility of pushing our winter quarters farther north and east, we took aboard one of the collapsible houses, which had been used at Cape Flora for storage purposes, and steamed away to the eastward.

At Cape Flora we had hoped to find Andrée and the members of his balloon expedition, which had left Danes island, Spitzbergen, a year before; but finding neither Andrée nor any tidings of him, we were forced to the sad conclusion, which time has since confirmed, that the brave Swede and his comrades lost their lives by a descent of their air-ship into the waters of the Barents sea, east of Spitzbergen and south of Franz Josef Land, probably within 10 or 15 days after their ascension.

After making an unsuccessful effort to push our ship north through the ice-clad British channel, which had been explored by Jackson and down which Nansen had come in his retreat from his winter hut, we moved eastward along the south coast as far as Cape Tegetthoff and Salm island. Off the south shore of this island we steamed in open water over the very spot where the Austro-Hungarian ship *Tegetthoff* had been abandoned, fast in the ice, a quarter of a century before. It may be remembered that for more than a year the *Tegetthoff* had been held in the ice, having become beset off the western shores of Nova Zembla, and that she had drifted helplessly to this spot, where her crew,

through this fortunate accident, were able to discover a hitherto unknown Arctic land. Vainly endeavoring to find water through which to force the *Fridtjof* still farther north along the east coast (then unexplored), and finding nothing but ice in every direction, we were compelled to return to Cape Tegetthoff, and there send our stores ashore for the purpose of establishing winter quarters. By August 8 this work was completed, and the ship sailed away for home, leaving us the only human inhabitants of Franz Josef Land, our nearest neighbors being Samoyedes and a few Russians in Nova Zembla, 500 miles to the south. Neither Franz Josef Land nor Spitzbergen is now inhabited by Eskimo or other northern tribes, and, so far as can be learned, never was occupied by any other men than Europeans there for the purposes of exploring and hunting or fishing. Spitzbergen has been known for 250 years, and is visited every summer by a considerable number of craft, but Franz Josef Land has until recently remained almost a *terra incognita*.



MAPS SHOWING THE ROUTE OF THE FRIDTJOF, 1898

The cosmopolitanism of modern scientific exploration is nowhere better illustrated than in this region. Discovered by chance by Austro-Hungarians, it was next visited by Englishmen under the leadership of B. Leigh Smith. It was in 1882 that Mr Smith, on his second voyage to these coasts, lost his ship, the *Eira*, near Cape Flora, and was compelled to pass the long winter in an improvised hut built but a few rods from Mr Jackson's subsequent headquarters. The ruins of that hut, in which 25 men passed the winter in good health, living chiefly

upon bear and walrus meat, still remain, mute witnesses to the fact that Dr Nansen and Lieutenant Johansen were not the first explorers to show that if worst comes to worst the adventurous man, caught out for the long night, may make himself reasonably comfortable with such materials as the country affords, while his rifle keeps him from starvation.

Next came the carefully prepared Jackson-Harmsworth expedition, which explored the western and central parts of the archipelago, but did not succeed in getting farther north than a little beyond the 81st parallel. Mr Jackson, whom I esteem as a painstaking and conscientious explorer, pronounced his judgment that Franz Josef Land was not a good gateway to the Pole, being a mass of small, detached islands, instead of a continental land mass. My own opinion is quite the contrary. It is true the region is one of comparatively small lands and many islands and in summer the straits and fiords are broken up and filled with drift-ice, which precludes, more or less, active expeditionary work; but at this season of the year not much can be done anywhere in the Arctics, and in the favorable season, to wit, the spring of the year, these fiords and straits afford the best of roadways toward the far north.

The next visitor to these lands was Dr Nansen, and he came down from the north on his return from his memorable sledge journey from the *Fram*, reaching the northeast islands at the end of the summer, and finding it necessary to winter in an improvised hut. Next spring, without knowing where he was, and imagining himself to be nearer Spitzbergen than Franz Josef Land, he renewed his journey, only to meet, by a most rare and happy chance, with the Englishmen at Cape Flora.

After the Norwegians came the Americans, ourselves, with our Norwegian comrades, and as we were coming out this summer we met going in the young Duke of Abruzzi, the Italian prince. This young scion of royalty (he is a son of a former King of Spain, Amadeus) has at great expense outfitted his expedition, and is determined, as he says, to reach the Pole or lose his life in the effort. When we met the Duke his ship, the *Stella Polare*, was in the British channel, in latitude 80° 20′, and with good prospects of pushing 20 or 30 miles farther north before stopping for the winter. Subsequently a pigeon message is reported arriving in Russia with word from the Italian explorer that he is wintering about the 81st parallel of latitude, near the site of the Nansen hut. He has, therefore, an excellent chance for doing good work

BASALT FORMATION — VIANA DOS LAVA

in the way of a northerly advance next spring. He has 120 dogs, procured for him by Trondhein, and every device that ingenuity could suggest or money buy. The real test for him will come, as it comes to all who attempt the arduous road to the Pole, when he leaves his comfortable winter quarters or his ship and takes to the open field in a sledging trip during the extreme cold. Up to this time it is all comparatively easy, but sledging in February, March, and April tries men's endurance and courage to the utmost.

It is not too much to say that of all the men now in the Arctic regions the young Italian prince has the best chance to reach the Pole or to eclipse Dr Nansen's record. In my opinion, neither Peary nor Sverdrup, both of whom are wintering on the west coast of Greenland, about latitude 79°, has much chance. Their base is too far south. True, Lieutenant Peary has supplies at General Greely's house at Fort Conger upon which he may draw during his sledge journey next spring, but he must travel 150 miles to reach that outpost, and then will be but a little nearer his goal than the Italian is at his base. Besides, Mr Peary was unfortunate enough last winter to suffer the loss of seven toes, and though he is known to be a resolute man, it is questioned by all men of Arctic experience if it be possible for him, thus handicapped, to endure the tortures of a severe sledging campaign. As for Captain Sverdrup, who has so far failed in his scheme to circumnavigate Greenland in the *Fram*, it is not known precisely what he is to attempt to do.

With Peary, Sverdrup, and Abruzzi the conditions are the same in one important respect as they were with us. The effort to make the North Pole must be by a dash, and nothing but a dash. The writer admits that he was the author of the phrase, "a dash for the Pole," but he cannot claim credit as the originator of the idea. As far back as 1827, Parry, the Englishman, attempted a dash for the Pole from the shores of northern Spitzbergen, and established one of the northerly records in that constant advance toward the Pole which restless man has persisted in making. Many other dashes have been made since that time.

Why must it be a dash? Why cannot one take his time to the task, making a gradual approach, year after year? These are questions often asked. The answer is very simple. If we had land extending to or near the Pole the old theory of a gradual advance from depot to depot would hold good. Reaching the Pole would in that case be simply a question of persistent effort,

of stretching out a base of supplies, of a long campaign, or of one organized on a sufficiently large scale to enable the flying column at the front to be well supported from the rear. But the polar explorer, like the mining engineer, the railway constructor, and the colonist, must take conditions as he finds them and adapt his methods to them. There are two main avenues of approach to the Pole—one by North Greenland and the other by Franz Josef Land. These are the two lands reaching nearest to the Pole from lower latitudes, but neither extends, as far as we now know, nearer than within 450 miles of that mathematical point upon which it is the ambition of man to plant his feet.

The aim of every pole-seeker is to get his base or his outpost established as far north as possible upon the land, and to make a dash beyond that point. Thus Mr Peary planned a depot of supplies at the extreme northerly limits of Greenland, but has not as yet been able to establish it. Abruzzi is wintering at 81°, and we made our headquarters a little north of 80°, and established an outpost about 81°. The explorer may use two or three years in establishing his outposts upon the most northerly land he can employ for this purpose, but when he once leaves the land and takes to the frozen surface of the polar sea his journey must be one of short duration—a dash—for these reasons:

1. It is only in the spring of the year that he can travel advantageously over the ice-sheet, and this is so because the winter is too dark, while in the summer the warmth of the sun makes the snow soft and "sticky," fills the pockets with sludge and water, and aids the winds and currents in breaking up the ice. The favorable, practically the only, season for travel over this drifting, shifting field of ice, is confined to March, April, and May, with what little of February one is resolute enough to use amid the darkness, and a part of June in which he may still do something before the snow becomes too soft. Thus the pole-seeker has at his command from 110 to 125 days, according to the earliness of his start, in which to make his northerly journey and his return to the land.

2. Everything he and his dogs eat, as well as the fuel for melting ice into drinking and cooking water, must be carried from the land or the outmost depot, not only for the advance journey, but for the return. Nothing can be had on the way. There is a limit, of course, to the weight of load that may be carried, and if the sledge party started with supplies for a six months' campaign they would be so heavily burdened they could make no

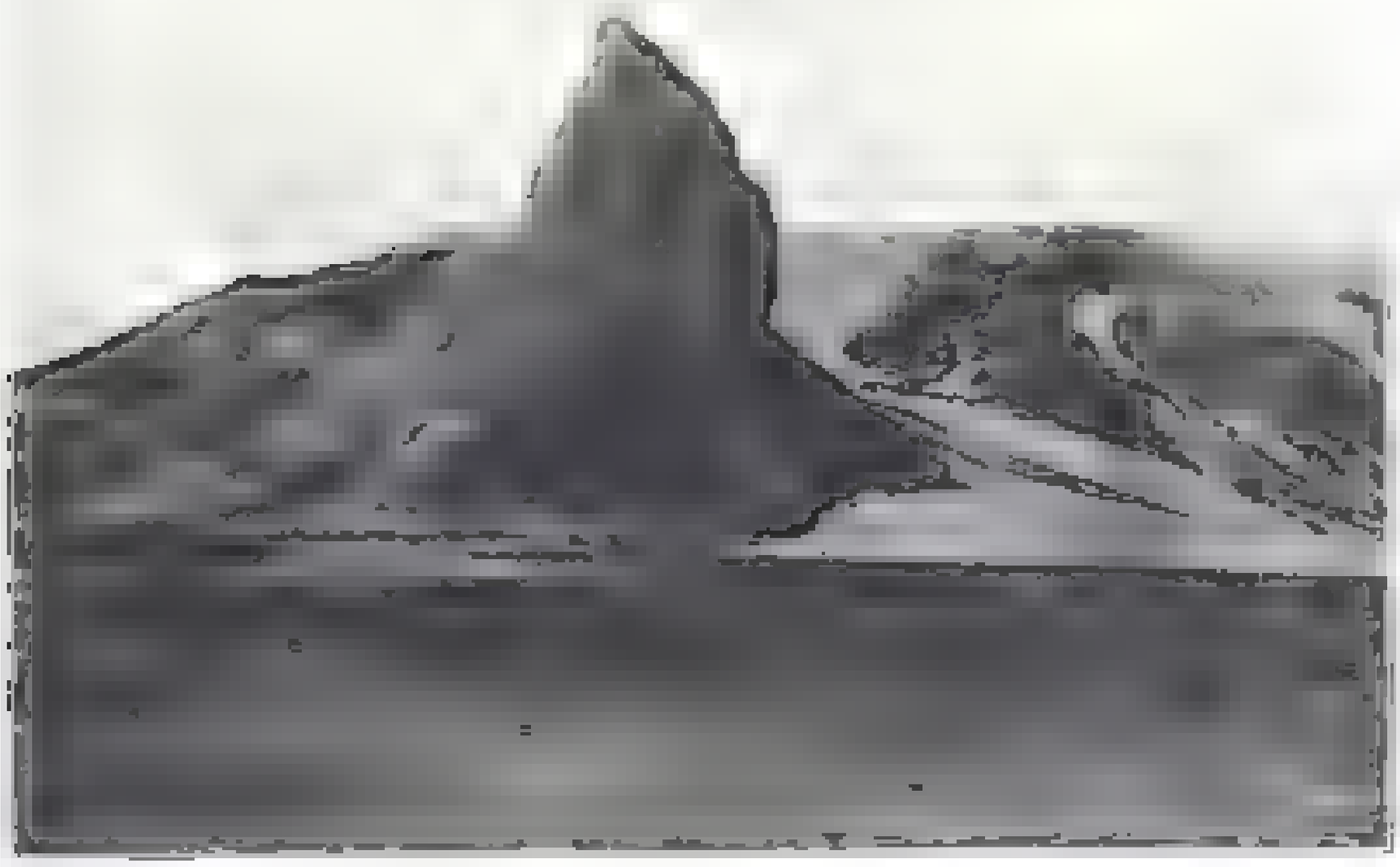
A PAIR OF WHITE BEARS FOR DINNER

progress at all. At the minimum each man must have two pounds of food and each dog one pound per day, and the hauling power of a dog is limited to about 60 pounds and of a man to about 200 pounds. Besides, there is weight of sledges, instruments, bedding, weapons, etc., to be reckoned.

It is useless to establish depots upon the sea ice beyond the land, for the sufficient reason that they could never be found again, except by rare good luck. Even in winter the ice-sheet is never at rest. It is constantly drifting to and fro, with a general movement, as was shown by the voyage of the *Fram*, toward the west. If one left a depot upon the ice he could never be sure the ice had not opened there during his absence and destroyed it. On returning from their sledge journey, Nansen and Johansen made no effort to find the *Fram* again, though they were at no time more than 115 miles from the ship, and on their southward march, with a dreadful and doubtful prospect before them, they must have passed within 30 or 35 miles of her at farthest.

Limited in time and limited in weight, the explorer perceives

[illegible]



[illegible]

[illegible] reach [illegible] the Pole, and so [illegible] the work of [illegible] exploration, which also formed a part of our plans, we established at Cape Heller [illegible] a depot of [illegible] This was done as soon [illegible] after our arrival in Franz Josef Land. [illegible] two days after the *Fedtjuv* sailed for Norway a party set out with small boats [illegible] for the north. [illegible] but [illegible] as far north as possible. When they started the weather was [illegible] apparently [illegible] favorable conditions

often change with amazing rapidity in the Arctic, and so it was in this case. Within less than 48 hours the party found themselves [illegible] breaking up of the ice and its rapid drifting out to sea under the influence of strong offshore winds. Nothing but desperate, even heroic, work enabled them to save their lives and the [illegible] present. Finally managing to reach the land they struggled northward for a month, sometimes [illegible] the pack-sheet, more often upon the rough shore, [illegible] crossing glaciers and snow and then adventuring some of their heavier weight [illegible] boats

[illegible] water, and were at length compelled to stop for good on account of a rift in the channel and the rapid approach of winter.

All hands builder there on a point of rocks. A few pieces of driftwood served for the ridge pole. The hides of walrus, hauled in the winter hours of Antarctic sunlight, formed the roof. To this hut were moved most of the stores for use the following spring, sledges, boats, and other articles needed on the coming journey. Forty dogs were there also, and for their supervision and care a water tight flesh of fifteen walruses was [illegible] square and stretched in the form of snow blocks. To protect the hut from the weather a sloping wall of snow was built around it. These walls like the presses hold in place like an [illegible] foundation for that Mr Hall with [illegible] of the party, named the place Fort McKinley. As soon as everything was made snug for the winter Mr Baldwin, pursuant to his instructions, asked for volunteers to return at the end of the winter to guard the stores and care for the dogs. All five of the Norwegian members of the party offered their services, and [illegible] was the direct punishment [illegible] two men assigned to the task were Emil Iversen and Bernt Bentzen. [illegible] both sailors, resolute, and warm [illegible] Together they had often talked of the [illegible] would be to raise a winter in the Arctic in a hut [illegible] food, and [illegible] was to be the real [illegible] of their dream.

These men [illegible] experience. Emil Iversen was a veteran Arctic sailor and traveler, and had been with the Wellman Expedition of 1894 to the north of Spitzbergen. Bernt Bentzen was a member of Dr Nansen's crew aboard the *Fram* on that famous drift-voyage through the polar seas. Both men were happy and well when their comrades left them and started for our headquarters at Cape Tegetthoff just at the beginning of winter. It is a coincidence that but a few miles to the westward of this hut is the spot where Nansen and Johansen passed the winter of 1895-96 in a similar structure, built out of such materials as could be found upon the ground.

Meanwhile those of us who had remained at Cape Tegetthoff were busy preparing our own house for the long winter. As first erected, the hut was a mere shell, two thicknesses of thin boards with an air-space between, and a roof of two layers of canvas. The house was tenoned, one of the sections containing a door and two others little windows. With [illegible] ks convergy-

[illegible] who walled up with blocks of snow and stretched a third roof over it in the shape of an old bearded mammoth from top to bottom, where we had pitched our tent. When the winter came on, we covered the snow dwelling over the house, fairly burying it in snow as to shut out the cold. The [illegible] were proof against the weather, and about three inches of snow fell on them. After darkness just two [illegible] in the morning [illegible] the roof, [illegible] the cabin [illegible] we crawled in and slept [illegible].

We made an [illegible] of snow-houses, [illegible] the [illegible] from the fury of storms, and within these we [illegible] Mr Baldwin [illegible] the people [illegible] a series of [illegible] during the dark season. Mr Baldwin secured [illegible] the Aretos and also made a [illegible] of the [illegible] in comparing the manifestations here with those [illegible] where [illegible] years [illegible] observations [illegible] where [illegible] are [illegible] by the government [illegible] opinion, [illegible] Mr Baldwin also [illegible] particularly from the point of view of its effect upon the magnetic needle. The report [illegible] as well as a general study of the phenomena [illegible] Dr Edward H. [illegible], medical officer and naturalist of [illegible] [illegible] the [illegible] of [illegible].

With [illegible] we passed a very comfortable winter. It is true it did seem [illegible] the [illegible] and where we sat upon our [illegible] "[illegible]," our front was constantly [illegible] while [illegible] from the effects of the [illegible]. If there was any [illegible] in [illegible] to keep the suffering parts warm and [illegible].

All three of my American comrades, unfortunately, were ill for short periods during the winter, and it was made impossible for any of them to accompany me upon the sledge journey to the north, for which we were all working diligently preparing. But these illnesses might have occurred at home, and were in no way due to the climate or the surroundings. We had good beds, good food, including plenty of fresh bear meat, and American canned beef, bacon, and flapjacks were not forgotten.

To the most of us the winter seemed short and not much of a test of patience. True, the absence of the sun for 127 days and nights was somewhat of a depressing, leading us to the conclusion that if we were going to pass the remaining four or five days in these regions sunworthy in the religious sense would most surely appeal to us, but we had work to do, hours to keep, scientific observations to carry on, books to read, exercise in the open air to take when the winds did not blow too severely and the night was not too long. Almost every day we were able to work out in the upon snowshoes, and glorious it was to get about in the crisp air and the bright moonlight. But for the moon the far northern world would be in the very depth of gloom during the winter; but when the skies were clear and the moon was full, the Arctic night was almost as bright as a winter day in temperate zones, and some of our best photographs were taken under these conditions.

Cold was not neglected by any means, of course, even in the coldest weather. A tub of water was taken into the stove room, the door closed, and, though the temperature there was usually from 5° to 10° below zero, we stripped and had not to tolerable comfort and without taking cold. In fact, such a thing as a cold the writer has never suffered from in the Arctic regions. Enough he has bathed in the open sea, diving from ice edges, and refreshed himself by a naked plunge in a natural lake formed of ice floes and water. Wool is now admitted to be better than furs for extreme cold, though some travelers cling to fur garments. In the Arctic one does not suffer from the direct effects of cold, but from its indirect effects in the formation of frost and damp within, the condensation due to congelation of the exhalations from the body. It is for this reason that wool possesses superiority to skins, as the former permits the moisture to pass through the fabric, the frost forming outside, while furs retain it within. Upon the sledge journey, in temperatures ranging from 10 to 45 below zero, the writer wore no furs, save a pair of reindeer skin

his snowshoes upon his feet. With these moccasins were from three to five pairs of thick woolen stockings, these being surrounded by loose dry grass to absorb the moisture. He never once suffered from cold feet, and even after he had met with an accident and the circulation in one of his legs below the knee was almost wholly stopped, he suffered no [illegible]. For the hands we [illegible] leather [illegible]. We usually wore two pairs of ordinary woolen mittens. The inner pair was dry and warm, while the outer pair was lined with frost, but it could be changed at intervals.

February and March were our coldest months, and these were the months of the sledge journey. The lowest temperatures observed by us were [illegible] under [illegible]° below zero, not as great a degree of cold as is known every winter in Siberia and in the interior of Alaska; but it must be remembered that all of our observations were taken at the sea-level, where the relative humidity of the atmosphere is greater than upon the elevated plateaus of Siberia or in the mountains of Alaska. Franz Josef Land we found to be a region of storms, due probably to its proximity to the comparatively warm Barents sea to the south, where the influence of the Gulf Stream is quite marked, and to the fact that it lies directly within the track of what might properly be called the Arctic trade wind.

This Arctic trade wind, the result of the same causes as the trade winds so well known to navigators in the southern hemisphere, blows from northeast to southwest as the trades of the regions below the equator blow from southeast to northwest. In both cases the chief causes are the rotary motion of the globe and the flow of cold air toward warmer zones along the surface of the earth. It is this trade wind which produces the set or current of the Arctic seas from the northern coasts of Siberia to the great outlet of the ocean between Greenland and Spitzbergen—the same movement of waters that Dr Nansen relied upon to bring the *Fram* through in safety. In Franz Josef Land we had opportunity to observe not only the effects of this current pouring down through all the sounds and straits summer and winter, either under the ice or breaking the ice-sheet and carrying the debris with it, but also the meeting of two opposing forces, namely the Arctic trades and the Gulf Stream. The mighty ocean river that debouches from the Gulf of Mexico, traverses the coast of North America, and crosses the Atlantic to the shores of Great Britain, divides there into two branches.

that flows southward towards the equator, while the colder Arctic current hugs the coast of Norway, keeping ice-free also the Arctic and harbors of that country, so much more further north than the latitude of Point Barrow in Alaska, and keeping on into the Barents Sea against the western coast of Nova Zembla and, then turned northwestward, continues on its course to a westerly direction along the southern coasts of Franz Josef Land. There are no gatorns and to operate in this sea we carefully to avoid the mingling of the two currents. Just as the Gulf Stream is the product of the piling up of masses of water within the Gulf of Mexico by the trade winds of the southern hemisphere, so the Arctic current is caused by the icy waters driven in to the Atlantic from the polar seas as the product of the northern trade winds. We were thus at a most advantageous point for study of this vast circulatory system of the sea. We were at the meeting of the waters from the two hemispheres.

Of great importance to explorers is this constant movement of the huge masses which are piling upon Arctic lands. It frees the coast of Franz Josef Land of ice to open the summer months, making navigation along its shores comparatively easy, but at season even in August there may be a tight belt of almost impenetrable pack far further to the south. It brings to Arctic shores, from the hinterlands of Siberian rivers, masses of driftwood for fuel and building purposes. It seemed to us a remarkable instance of nature that we should find timber from the interior of Asia to put into our little hut and to burn with blubber for our fires in the barren wastes where the tree ceases to grow and where the Northern Polar itself.

With our two gun teams we frequently made considerable journeys of two or three days and at times we thought it not needful to carry fuel. Perfectly fresh water could be obtained from large masses in the sea and floes of frozen water, even in the summer months. In this way we saved quite a few pounds of weight, which was important. We had a portable hatchet of Swedish make, and a pocket knife, and these were considered for make of knives. We had drawn firewood upon the sledges, for our dogs, and never at any time did we have need of the axe.

The sea less warmer was in great part to come. Best of all, gains for sweet p[illegible] made with us. It was an Arctic [illegible]

[illegible] parties should be of but a [illegible] stature. It was a [illegible] to record that though we were Americans and Norwegians [illegible] in one little room night and day for five months, not a word of discord between Americans and Norwegians marred the novel experience. No better or more faithful men ever served under the banner of Norway than those young men who lived with me under the Stars and Stripes at Cape Tegetthoff that winter, in the most northerly inhabited house in the world, and who subsequently shared with me the sledge journey.

[illegible]

up, reach [illegible] have to start very early in the Arctic [illegible] [illegible] through deep snows and rough ice, encountering [illegible] three miles a day [illegible] at last arrived at Fort Melville [illegible] near the end of February. Here we found [illegible] work [illegible] [illegible] what [illegible]

to the history of Arctic exploration—had occurred during the winter. Hentzen had been taken ill in November, shortly after our men had left the two there together, and had never recovered. Lingering till January 2, carefully nursed by Bjoerving, death had [illegible] Hentzen's [illegible]. All was [illegible] time, when at the head of our [illegible] I found myself standing in front of the tunnel which led down into the snow-buried hut. Then we crawled in and Bjoerving poked up the blubber fire and started to make us some coffee as I sat looking about at the strange little cave, its walls coated with hoar-frost even within two feet of the little earth flames.

"Where did you bury Hentzen, Paul?" I asked.

"I have not buried him yet," was the reply. "He was in [illegible]

a little image—a bagpipe in up; it had been here in Washington and was kept in the darkened portion of the hut, partly partitioned from the remainder of the apartment, to which Paul had pointed. As soon as my eyes had become accustomed to the peculiar light which the frosted walls and roof reflected from the dim lamp, I saw at my feet a one-man sleeping bag, bearing every [illegible] that it had been occupied by a living man a little [illegible] before. Lying alongside, within arm's reach, lay another bag. This one was occupied, and had been for several months. Bag and occupant were now frozen as hard as rocks. For two months Bjoerving had been [illegible] by the body of his dead companion—two months of [illegible] and of the Arctic darkness when night was [illegible] to be distinguishable from day—two months [illegible] in this Arctic hut.

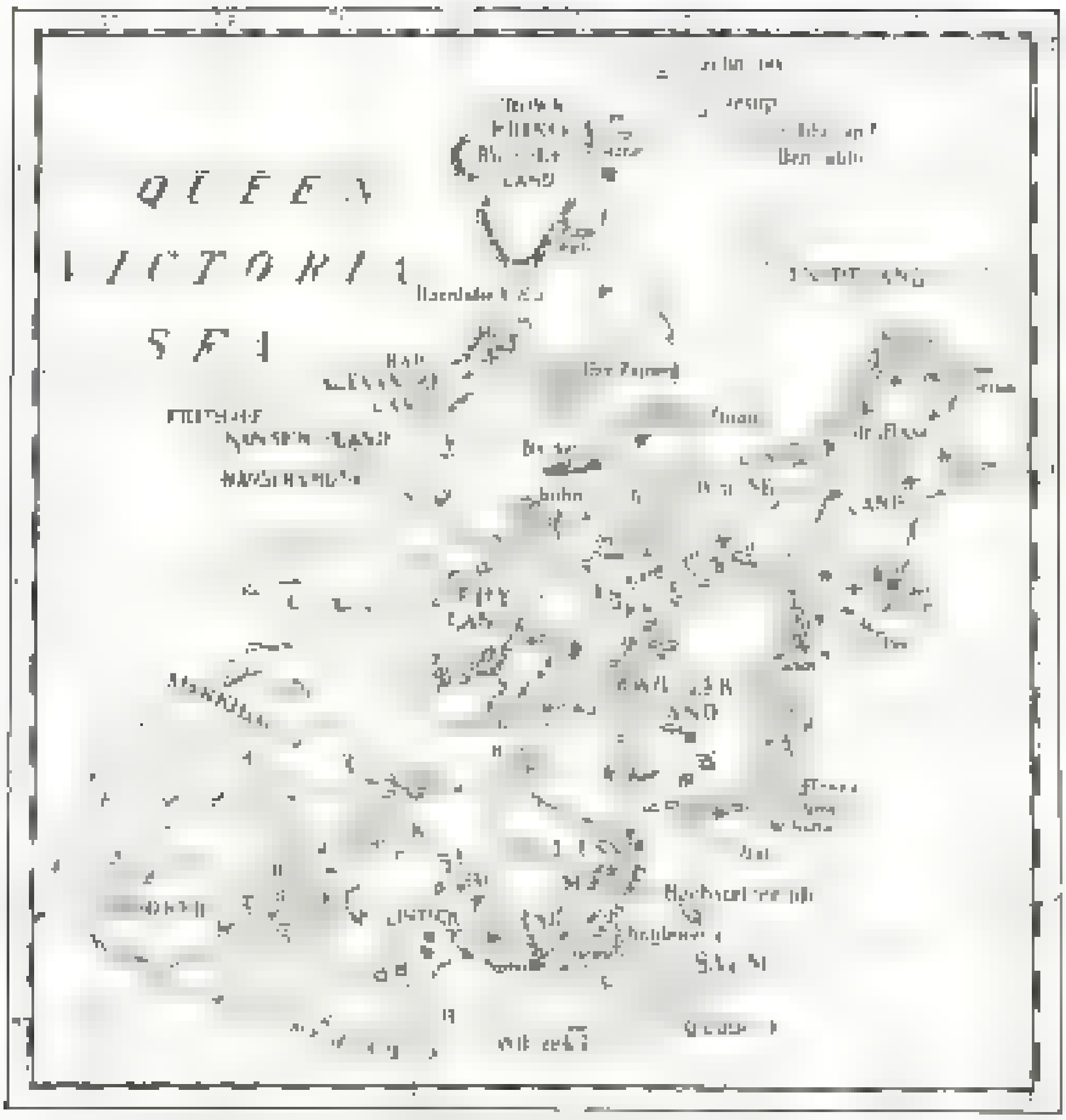
Bjoerving had [illegible] Hentzen because he had promised [illegible] would not, and he had [illegible] because of the sick man's wish that if buried in the cold and darkness it would be [illegible] strangers that the bears and foxes might get at his remains.

Now thoroughly [illegible] dreadful ordeal through which he had passed, Bjoerving was [illegible] and [illegible]. He was a little nervous, and had difficulty in getting asleep, but next day he helped us drag out the body and carefully carry it to a hole which we had [illegible]. It was a terrible day, 45 below zero, with a fierce blast blowing down from the glaciers. But the most [illegible] task of us all, after the little [illegible] ceremony was over, was final. For a time I was busy checking up all the openings in the walls around the [illegible]. "I promised him," Bjoerving and I foxes should not get him," he explained

We took Bjørvig with us, contrary to our original plan, and continued our journey to the north. Though the weather was still gloomy, the snow deep, in places, storms too frequent, the ice rough, and the loads heavy, we made satisfactory progress. By March 26 we were off the east coast of Rudolf Land, near the 82d parallel of latitude. Our prospects were bright. We had traversed one-fifth of the way to the Pole, and had yet at our command for northerly advance six or seven weeks of the most favorable season. We had passed through the worst of the darkness and cold, and had just reached that period when, in these latitudes, we were to have the sun all the time in the heavens. All our men and equipment were in good condition and we were scenting the victory that lay before us when a seemingly trivial accident occurred to one of our number. And pride goeth before a fall, and this man, glorying in his strength and endurance, [illegible] sledge through heavy ice with his team of dogs and fell in a little crevice in the path. The hurt which he received would not have been serious had he stopped for ten days or a fortnight for rest; but on that work, with the farthest north, and perhaps even the Pole itself, beckoning him on, one does not stop. He always thinks he will be better the next day and up to work the day after. So he keeps going, dragging himself along, till he drops in the snow and can go no farther.

Then came the bitter retreat. The injured man had to be put upon a sledge and be dragged by his faithful companions and his dogs. He suffered, of course, but quite as much in his pride as in his body, for it is a sad blow to be hauled off the field of battle. His Norwegian comrades were as brave as lions and as tender as women. They nursed him and cared for him in a manner full of tenderness. They made the ambulance [illegible] over the rough ice as comfortable as they could. The tent they converted into a hospital, and bathed the injured limb with hot water at temperatures of 40° below zero. Fearing their broken leader might die on their hands, they made a gallant race for a man's life back to headquarters at Cape Tegetthoff, arriving there April 2.

If the man riding southward upon the sledge in those first days of April looked longingly to the eastward, where the group of ice-capped and snowy unexplored lands was seen under the rays of the sun, and planned that in a couple of weeks he would take his sturdy Norwegians out there to explore and


QUEEN
VICTORIA

[illegible] that was [illegible] another evidence that in Arctic exploration it is a good thing to have plenty of optimism, served in daily rations and carried in proper storable packages.

This journey was subsequently made, however, by a party led by Meteorologist Sadlerin, and the result of it was that, [illegible] when the Wellman expedition arrived in Franz Josef Land the eastern limits of that land were unknown and formed a topic of discussion among geographers. They are now carefully marked out upon the map. By means of these two large journeys and a voyage in the open land parts of Markham Sound, which [illegible] made in the steam yacht Capella, which was sent after the expedition at the expense of my brother, Arthur Wellman, some 20 new lands or islands were added to the map of that archipelago. Upon these new lands, their ranges and straits, we had the pleasure of placing the names of well-known American scientific and public men who had influenced the exploration, including that of the President of the National [illegible].

We hear testimony to the very strange nature of the survey of a part of Franz Josef Land, which had been made by Payer, the discoverer of that region, 25 years before. He made great error, the [illegible] for instance, in supposing a land of [illegible] extending northward from Wilczek Land. I have [illegible] a part described by Dr. Nansen, who had launched at the [illegible] and crossed on a journey over the sea to the spot where Payer had placed his [illegible]. Wherever, [illegible] the interpretation of land [illegible] [illegible] Arctic explorer.

For [illegible] the path of Dr. Nansen—[illegible] sledge, [illegible] far to the [illegible], where we saw, but [illegible], large islands which he had [illegible] as they [illegible] the [illegible] of the coast of Northeastern Siberia. We regret, of course, the [illegible] which deprived us of our chance to wrest from the grasp of Nansen the honor of the farthest north, but if we have [illegible] to contribute to enlarging the world's knowledge of the world, we feel amply repaid for all the hardships and [illegible] sacrifices.

A [illegible] we are glad [illegible] to be [illegible] and sprightly [illegible] who knows [illegible] of [illegible] knowledge. We

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

THE HARRIMAN ALASKA EXPEDITION

By Henry Gannett

Chief Cartographer, U. S. Geological Survey

The expeditions sailing under the auspices of Mr. Harriman have appeared in numerous articles of THE NATIONAL GEOGRAPHIC MAGAZINE, and Seattle was reached July 31. It left the same port for the Alaskan land, and in the interests of the layman of course the *Elder* bearing the expedition, steamed 5,000 miles and visited points along the entire northwest coast from Seattle to Behring Strait. Not less than 50 villages in Alaska were made. The *Elder* continued to feed itself in a generous way on the never-ending sketch book of Alaska.

The party was composed of Mr. Harriman and family and a few [illegible] with some of the scientific men [illegible] of the expedition. It was impossible to have been geologists, botanists, geographers, every possible facility for the prosecution of the work was made, including offices for cabinet work and necessary places for the preparation of specimens, etc. Indeed, the whole expedition, although [illegible] primarily as a pleasure trip for Mr. Harriman's family, was so [illegible] in all ways to the needs of the scientific party. Even the movements of the ship were arranged day by day by a committee of board in the interest of the scientific work.

The general plan pursued was to follow the coast, making short stops at numerous points for the purpose of making observations and collections. The steamer followed the inside passages as far as Cordova, then took the outside passages on the way back to Seattle, where the party was reached. At one point, which is notable for the [illegible] icebergs, the ship remained for several days, which were improved by the geologists in exploring the glaciers, paying especial attention to the [illegible] of the glacier, for comparison with earlier observations made for comparison by former students. A landing stop was made in Yakutat Bay, where a side trip was taken not only to the head of Yakutat Bay proper, but traversed the extension to Disenchantment Bay. From Yakutat Bay the expedition crossed to Prince William Sound and spent a week in Cordova, Port Wells and Knight Island, a region

Along its shores are many glaciers, few of which are of record, which extend down to tide and drop bergs into the sea. In this region Mr. Gilbert explored and mapped one of the finest glaciers of Alaska, which lies upon the north shore just west of Port Valdez, to which the name of Columbia glacier was given, the fiord into which it empties being called Columbia fiord. Port Wells, an extensive fiord on the northwest coast of Prince William sound, was also explored and a sketch map of the upper part of this fiord is presented herewith.

From Prince William sound the boat visited Homer on Kenai peninsula, and thence proceeded to Kadiak island, where parties were landed for [illegible] work. [illegible] the boat coasted the Alaska peninsula, passing among the Shumagin islands, and thence to Unalaska, stopping at a number of points on the way. Leaving Unalaska, a short pause was made at Bogoslof, a group of two volcanic islets, one of them a century old and the other but four years of age; thence the course was north to St Paul island, where a short stop was made to visit the fur-seal [illegible]. Thence to Plover bay, in northeastern Siberia, where reindeer and native people were first encountered. The [illegible] then crossed to Port Clarence, passing just south of Bering strait, within sight of the Diomede islands. At Port Clarence was [illegible] a fleet of arctic steam whalers which were waiting there for the ice to retreat from the vicinity of the straits. From Port Clarence the boat visited various islands in Bering sea, St Lawrence, St Matthew, and Hall islands, and thence steered a straight course to Unalaska. From that point she returned to Seattle, following in a broad way the course [illegible] at [illegible] comparatively few points.

In general, the expedition was greatly favored by the weather. It is not commonly said that there is such a thing as good Alaskan weather except that it will be rainy [illegible] St [illegible] during the two [illegible] and finest portion was in Alaska where there was not one rainstorm, and there were many clear bright, sunny days. At other times fogs and cloudy weather were frequent. If [illegible] on [illegible] when there was little to see [illegible] and the work of the expedition was but slightly [illegible] by it.

The western [illegible] coast of Alaska, from [illegible] to the Aleutian islands, [illegible] a succession of glacial fiords which contain [illegible] glaciers [illegible] reaching [illegible] Many [illegible] are [illegible] filled with glaciers [illegible]

cases these glaciers still extend so far downward as to protrude their fronts into the deep water of the fiords.

A few thousand years ago, perhaps at the time the Egyptian pyramids were being built, the fiords which form the inland passages now traversed by the tourist were filled with great rivers of ice from the sea bottom nearly to the mountain summits. Inland the ice was spread in great sheets, covering all but the highest mountains. The retreat of the ice, though apparently slow, has yet been at so rapid a rate that the oldest land, which first emerged, has suffered little from subsequent aqueous erosion. The glacial carving is still in strong evidence, and this in a region of excessive rainfall and steep slopes, where aqueous erosion is at a maximum. From these oldest regions, densely forested, and with the remains of older forests under foot, we may pass, going up the fiords, to land continually younger. As we approach the glaciers the older dead forests disappear. There is now but a single generation of trees, and these become younger and smaller. Soon they are succeeded by alder and willow bushes, then by grasses and annual plants, by mosses, and other low forms of vegetation, and, finally, by bare rock ridges, polished and scoured by ice, and by bare glacial gravel a few rods only from the ice front.

The glaciers are still retreating. The next generation will find few of them with their fronts still in the sea, discharging bergs. The thunder of the glacier, as it crumbles off into the sea, will then be no more heard in the land. A century ago, when Malaspina explored these shores, the ice extended much farther down the fiords than now; they found fiords closed which now are open and the coast itself owing to this [illegible] the extent of far less deeply into the land. Malaspina sailed up Yakutat bay, passed the island, and for the moment believed that he had seen a way to discover the long-sought northwest passage, but he was soon confronted by a barrier wall of ice, which, extending from side to side, barred farther passage. Sadly he named the upper portion of Yakutat bay Disenchantment bay, for his dream was over. Now, a century later, the front of Hubbard glacier has retreated and is perhaps [illegible] miles farther away. The head of Russell fiord, as the northward extension of Yakutat bay has been named, in honor of Prof. I. C. Russell, who first explored it. When this fiord was dammed by the ice front of Hubbard glacier it became a lake, with its level some [illegible] feet above sea, as shown by lake beaches along its walls. Then it overflowed

to the south, directly to the Pacific, or westward to the lower part of Yakutat Bay. Here, therefore, is a fiord 25 miles in length, opened up within a century.

Port Wells, in Prince William Sound (see map, page 511), is a fine example of the retreat of a glacier and the opening of new pathways. The old charts show this fiord to be only some 30 miles in length, whereas the explorations of the Harriman expedition in 1899 show that it now runs northward into the land not less than 40 miles. It terminates at the upper end in two branches, each occupied by a great glacier, Yale and Harvard, whose fronts are in the water, while along the west side of the fiord are four smaller glaciers, tumbling down in ice cascades from "hanging valleys" into the water. These terminal glaciers have retreated 3 miles in a century.

But the finest of the recent accessions to the navigable fiords of Alaska is the Harriman fiord, discovered and mapped by the expedition. This is a western branch of Port Wells and is not indicated on any chart. Five miles above its mouth it turns from a northwesterly to a southerly direction and runs in this course some 10 miles. At its head it is nearly closed by the northern of Washington glacier. Indeed, although this glacier had been known for years back to the people who navigated these waters, it was supposed that it extended entirely across the fiord, closing it. It was therefore a great surprise even to the local pilot of the *Elder*, when on a close approach to the front of Washington glacier disclosed a passage through into an open fiord, lined with magnificent glaciers and mountains, beyond.

Under the circumstances it required great nerve to take a 1,700-ton steamer through waters so utterly unknown as these. There was no danger from a shoals in the open fiord, but at the point of rock which juts at the narrow place there would have been a mountain might have been encountered at any moment, but the ship was safely piloted ahead of the fiord, disclosing at every turn a wonderful scene of rock and ice.

From a consideration of it is certain that within a few years the four great glaciers which now drop bergs into the waters of Harriman fiord were joined in one, which occupied the fiord from its present head to its mouth. Moreover, but few years have elapsed since Washington glacier has opened or drained the fiord at its head, so that it is not accessible except by sled journey. From these, and from a number of similar instances which might be cited, it is more than Alaska is "Our Yukon Possession."

The coast, as


PRINCE WILLIAMS SOUND, ALASKA

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

PLACE NAMES IN CANADA

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

THE ANTARCTIC CLIMATE

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

GEOGRAPHIC LITERATURE

Puerto Rico. Its Conditions and Possibilities. By William Dinwiddie. With illustrations from Photographs by the Author. Pp. 293. New York and London: Harper & Brothers. 1899. $2.50.

Mr Dinwiddie's work contains an [illegible] description of the commercial and industrial possibilities of the island and its [illegible] excellence of the illustrations made from views from his own camera. Those who are merely interested in the illustrative side of Porto Rico will find this an excellent book of reference. The scientific statement is [illegible] lacking, however. For instance, an illustration of one of the white limestone bluffs between Ponce and [illegible] is entitled "coral formation," when in fact it is one of the finest examples of the [illegible] we have ever seen. Mr Dinwiddie is excusable, however, for other geologists have persisted in terming the [illegible] limestone "coral formation." In the long chapter entitled "The Great Caves" the author commits the common but provoking blunder of treating technical subjects [illegible] in order to increase the reader's anticipation of his own [illegible] which [illegible] to follow, he begins the chapter with the remark that "it is astonishing how little is known about the geology of the island." A few lines further on he says that the owner of the [illegible] "tells me that several years ago an Englishman, a member of some British scientific society, had paid a short visit to the caves, [illegible] and it is quite likely that a report of its wonders has been published in the scientific journals of Great Britain." Perhaps if the "scientific journals" had been examined, [illegible] would have been found at least [illegible] the description of the caves, which, so far as Mr Dinwiddie's present [illegible] are concerned, only resulted in about 3,000 words of "padding," leaving the reader in as profound a darkness concerning the nature and origin of the caverns as that which must exist in those wonderful depths. At least, he in no manner adds to that knowledge of the geology of the island which he assumes to be so deficient. It is also regrettable that Harper & Brothers permitted the use of the [illegible] which is [illegible] our estimation, since the island was [illegible] named Porto Rico by the United States government [illegible] In [illegible] and on the whole is a credit to its author and publishers.

Robert T. Hill.

Japan in Transition. A comparative study of the progress, policy, and methods of the Japanese since their war with China. By Stafford Ransome. 8vo, pp. xvi + 261, with 50 illustrations and 4 maps. Harper & Brothers, New York and London, 1899.

This book, written by a journalist trained in the study of foreign peoples, aims to present a picture of the present life, customs, ideas, and politics of the Japanese as seen by him in their relation to the rest of the

[illegible]

Through Unexplored Asia. By W. [illegible] Johnson. Pp. [illegible]. London: Bradbury, Agnew, & Co. [illegible]

This is a narrative of a portion of a notable journey through Asia from Cilicia, on the eastern Black Sea, to Southern Siberia, a distance of [illegible] years ago by the author in company with the late Captain Burton. The extreme western point reached was an old caravan bridge at [illegible] 35° east, [illegible] 36° north, and the extreme northern [illegible] was just above the 40th parallel. The present volume, which is not related to topography, carries the narrative forward to the shores of Lake Issyk. It is the author's intention to present the remainder of the narrative in a second volume. The book is written in the form of a journal, [illegible] the geography of the country traversed and the habits and customs of the people encountered. [illegible]

Adventures of the Khoodiee. By Angus Hesperus. Pp. [illegible]. London: Longmans, Green, & Co. New York: D. Appleton & Co. [illegible]

This is a narrative of adventure and observation made by the author during a trip to Chawbua on Lake Nyanza, and the upper Yassoo in the country of Ishee. It is a large [illegible] of adventures [illegible] the geology of the country as well as the physical [illegible] of the natives. The illustrations are [illegible] and are well executed. [illegible]

The Empire of the South, or Resources, Industries, and Prospects. By [illegible]. London: Longmans. Pp. [illegible]. [illegible] by the Southern Railway Company. [illegible]

This book is an [illegible] of the Institute at its [illegible]. The Institution of the book seems to be [illegible] "the promotion of [illegible] the Southern Railway Company, [illegible] the country traversed by the [illegible]. The [illegible] has been [illegible] [illegible]

[illegible] of the [illegible] the "territory" of the South Sea [illegible] the [illegible] the people, the products, [illegible] that it needs like a [illegible], and [illegible] estimated [illegible] the [illegible] of modern work. Considered as [illegible] of book [illegible] paper, print, and illustration, one of the finest specimens [illegible] very low [illegible].

Hawaii and its People. The Land of Rainbow and Palm. By A. S. Twombly. Boston: Silver, Burdett & Company. 1898.

In this book, an historical reader for young people, [illegible] to the [illegible] of the Hawaiian people, their legends, beliefs, and [illegible]. It is divided into three parts, which [illegible], with [illegible] and folklore of ancient Hawaii [illegible], with [illegible] beginning with Captain Cook's discovery of the [illegible], with modern Hawaii. There is also a [illegible] of the descriptive and [illegible] geography of the country, and the book [illegible] a number of good and attractive illustrations. It is one of a series of supplementary readers published by the same firm, of which [illegible] *Indians of the Southwest* and [illegible] *Argonauts*. E. L. G.

The Islands, Alaska, and the Indians. By William H. Wiley. San Francisco: Wiley [illegible], pp. xiii, 230, with [illegible] illustrations. [illegible] New York: John Wiley & Sons.

This book is an interesting narrative, well written in the form of a journal, of the trip made by the American Society of Mechanical Engineers to the San Francisco convention, in the spring of 18[illegible]. It is a [illegible] account of the experiences of the party during their visit in the South Pacific regions.

The Dismal Swamp canal was officially opened to traffic on October 24. The new waterway, which is 22 miles long, connects Chesapeake Bay with Albemarle Sound and makes the light draft navigable to vessels of the world-dreaded Dismal of old. It is expected to open up to the government hundreds of acres of fertile land and, a considerable amount of good hardwood and pine timber.

GEOGRAPHIC MISCELLANEA

Vessels drawing 25 feet of water can now enter the Galveston harbor, and the foreign commerce of the port is rapidly increasing.

Work on the Suez canal is being prosecuted with great energy, not the [illegible] that looked for before the end of 1899.

Professor W. Junker Bey, who died some time ago during an expedition among the Niam Niam tribes, is reported to have left $75,000 to the Ethnological Museum in Berlin. The interest of the bequest is to be used for purchasing new collections, illustrating the expeditions.

Dr. F. A. Cook, surgeon and naturalist of the Belgian Antarctic expedition, in an article which appears in *McClure's Magazine* for November, entitled "Two Thousand Miles on the Antarctic Ice," gives an interesting account of the experiences of the party during their winter in the South Polar regions.

The Dismal Swamp canal was officially opened to traffic on October 24. The new waterway, which is 22 miles long, connects Chesapeake Bay with Albemarle Sound and makes the light draft navigable to vessels of the world-dreaded Dismal of old. It is expected to open up to the government hundreds of acres of fertile land and, a considerable amount of good hardwood and pine timber.

[illegible]

[illegible]

[illegible]

[

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

INDEX

ERRATA

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

THE NATIONAL GEOGRAPHIC SOCIETY

SECRETARY'S OFFICE

Room [illegible] Corcoran Building, [illegible] Street, N. W., Washington, D. C.
Office Hours: 8.30 A. M. to 5.00 P. M. [illegible]

The National Geographic Magazine is sent free of charge to all members of the National Geographic Society

Recommendations for Membership in the National Geographic Society

The following form [illegible] of persons for [illegible] the Secretary.

[illegible] Society [illegible] Society [illegible]

[illegible]

To the Secretary, National Geographic Society,
Washington, D. C.

I [illegible] recommend.

[illegible]

JUNIAL & EGAN, PRI. WAY PRINT

DOUBLEDAY & McCLURE CO.

141-155 East 25th Street, New York.

The United States and Europe. With Special

ON THE EAR OF THE PAS AMENT OF PEACE

[illegible] to the Russian Peace Rescript [illegible] American [illegible] Exposition [illegible] Africa, the Congo, the East and Mid [illegible], the Concert of Europe and its work in Crete and Candia, and [illegible] suggested solutions.

Size [illegible] pages [illegible] over [illegible] portraits, maps, and [illegible] illustrations. [illegible] Price $2.00.

[illegible] Japan [illegible] Dutch Colonies.

[illegible] have not [illegible] in the least the [illegible] composure and [illegible] of the Land of the [illegible] forceful and suggestive [illegible] are well reinforced by [illegible] impressions—more [illegible] interesting [illegible] record, from an artist who occupies a [illegible] position [illegible] the sea [illegible] [illegible] most [illegible] pictures, on Japan [illegible] [illegible].

From [illegible] Rudyard Kipling.

35th THOUSAND.

This is an authorized edition of the collected letters of travel which Mr. Rudyard [illegible] between 1889 and 1894, and has [illegible] an accurate text of the [illegible] "The Smile of Buddha," "The [illegible]

Even Mr. Kipling [illegible] more entirely readable [illegible] [illegible] cheery humanity, and the wonderful art which permeates the [illegible] of these letters [illegible] [illegible] profit [illegible]

[illegible] Price, $2.00.

[illegible] Lieut. [illegible]

[illegible] AND PRESENT [illegible] OF THE [illegible]

This is an account of [illegible] new [illegible] possessions by an American [illegible] the seven years which preceded the Spanish war—Lieutenant [illegible] was [illegible] [illegible] [illegible]

APPLETON'S
GEOGRAPHICAL SERIES.

Edited by H. J. MACKINDER, M. A., Student of Christ Church,
Reader in Geography in the University of Oxford
Principal of Reading College.

[illegible]

List of the Subjects and Authors.

1. **Britain and the North Atlantic.** By the Editor.
2. **Scandinavia and the Arctic Ocean.** By Sir Clements R. Markham, K. C. B., F. R. S., President of the Royal Geographical Society.
3. **The Romance Lands and Barbary.** [illegible]
4. **Central Europe.** By Dr. Joseph Partsch, Professor of Geography in the University of Breslau.
5. **Africa.** By John J. Scott Keltie, Secretary of the Royal Geographical Society, Editor of "The Scottish Geographical Magazine."
6. **The Near East.** By D. G. Hogarth, M. A., Fellow of Magdalen College, Oxford, Director of the British School at Athens, Author of "A Wandering Scholar in the Levant."
7. **The Russian Empire.** By Prince Kropotkin, [illegible] of the articles "Russia" and "Siberia" in the *Encyclopædia Britannica*.
8. **The Far East.** By Archibald Little.
9. **India.** By Sir T. Hungerford Holdich, K. C. I. E., C. B., R. E., Superintendent of Indian Frontier Surveys.
10. **Australasia and Antarctica.** By Dr. H. O. Forbes, Director of the Liverpool Museums, late Curator of the Christchurch Museum, New Zealand, Author of "A Naturalist's Wanderings in the Eastern Archipelago."
11. **North America.** By Prof. J. Russell Smith, University of Michigan.
12. **South America.** By Prof. J. Rodolfo Kyle, Vice-President of Lehigh University.

Maps by J. G. Bartholomew.

D. APPLETON & CO., Publishers,
NEW YORK.

PRIZES OFFERED BY THE

NATIONAL GEOGRAPHIC SOCIETY

Essays on Norse Discoveries in America.

1. A first prize of $250 and a second prize of $[illegible] are offered for the best [illegible] location of the lands mentioned in the Icelandic Sagas.

[illegible] of the text, but not for embellishment.

[illegible] prize [illegible] prize [illegible]

4. The competition will close at 6 p. m., December 31, 1894.

5. [illegible] the Society, but in case of withholding one or both of the prizes on this ground, a new competition will be opened.

6. Immediately after the close of the competition the essays submitted in [illegible] board of judges whose adjudication shall be final.

HENRY GANNETT
Chief Geographer of the U. S. Geological Survey, etc.

ALBERT BUSHNELL HART
Professor of History in Harvard University.

ANITA NEWCOMB McGEE, M. D.,
Acting Assistant Surgeon, U. S. A.

JOHN BACH McMASTER, LL. D.,
Professor of History in the University of Pennsylvania.

HENRY S. PRITCHETT
Superintendent of the U. S. Coast and Geodetic Survey.

107 108 Corcoran Building, Washington, D. C.

JOURNAL OF THE MAGAZINE

THE NATIONAL GEOGRAPHIC MAGAZINE

Is a Journal of Geography—Physical, Commercial and Political

The editorial staff includes officers and experts of the National Geographic Society, with representatives of the Department of Agriculture, the Navy Department, and other Government bureaus, the Geological Survey, the Coast and Geodetic Survey, the Bureau of Ethnology, the Bureau of Fisheries, the Bureau of Standards, the Bureau of Plant Industry, the Bureau of Animal Industry, the Bureau of Forestry, the Bureau of Soils, the Bureau of Chemistry, the Bureau of Biological Survey, the Bureau of Public Roads, the Bureau of Mines, the Bureau of Reclamation, the Bureau of Education, the Bureau of Navigation, the Bureau of Steam Engineering, the Bureau of Yards and Docks, the Bureau of Supplies and Accounts, the Bureau of Ordnance, the Bureau of Construction and Repair, the Bureau of Aeronautics, the Bureau of Medicine and Surgery, the Bureau of Navigation

SPECIAL ANNOUNCEMENT.

THE NATIONAL GEOGRAPHIC MAGAZINE has a few unbound volumes for the years 1896, 1897, and 1898. Each volume contains numerous maps and illustrations and much valuable geographic matter. It is impossible to give the contents of each volume, but the following subjects show their wide range and scope:

VOL. VII, 1896: Russia in Europe, by the late Hon. Gardiner G. Hubbard; The Scope and Value of Arctic Exploration, by Gen. A. W. Greely, U.S.A.; Venezuela, Her Government, People, and Boundary, by William E. Curtis; The So-called Jeanette Relics, by Wm. H. Dall; Sutorin's Polar Expedition, by Gen. A. W. Greely, U.S.A.; The Submarine Cables of the World (with chart 40 x 30 inches); Sertanejo, by W J McGee and Willard D. Johnson; The Discovery of Glacier Bay, Alaska, by E. R. Seidmore; Hydrography in the United States, by F. H. Newell; Africa since 1895, by the late Hon. Gardiner G. Hubbard; The Seine, The Meuse, and The Moselle, by Prof. Wm. M. Davis; The Work of the U.S. Board on Geographic Names, by Henry Gannett; A Journey in Ecuador, by W. R. Rice; Geographic History of the Piedmont Plateau, by W J McGee; The Recent Earthquake Wave on the Coast of Japan, by E. R. Seidmore; California, by Senator Geo. C. Perkins; The Witwatersrand and the Revolt of the Uitlanders, by George F. Becker; The Sage Plains of Oregon, by F. V. Coville.

VOL. VIII, 1897: The Gold Coast, Ashanti and Kumasi, by Geo. E. French; Crater Lake, Oregon, by J. S. Diller; Roanoke and Weather Forecasts, by Willis L. Moore; Rubber Forests of Nicaragua and Sierra Leone, by Gen. A. W. Greely, U.S.A.; A Summer Voyage to the Arctic, by G. R. Putnam; A Winter Voyage through the Straits of Magellan, by the late Admiral R. W. Meade, U.S.N.; Costa Rica, by Señor Ricardo Villafranca; The National Forest Reserve, by F. H. Newell; The Forests and Deserts of Arizona, by G. E. Perrow; Modification of the Great Lakes by Earth Movement, by G. K. Gilbert; The Enchanted Mesa, by F. W. Hodge; Patagonia, by J. B. Hatcher; The Washington Aqueduct and Cabin John Bridge, by Capt. D. D. Gaillard, U.S.A.

VOL. IX, 1898: Three Weeks in Hubbard Bay, West Greenland, by Robert Stein; The Modern Mississippi Problem, by W J McGee; Dwellings of the Sun-Time in Iceland, Greenland, and Vineland, by Cornelia Horsford; Articles on Alaska, by Gen. A. W. Greely, U.S.A., Hamlin Garland, E. R. Seidmore, Prof. Wm. H. Dall, and others; on Cuba, by Robert T. Hill, Frank M. Chapman, John Hyde, and Henry Gannett; on the Philippines, by Dean C. Worcester, Col. F. F. Hilder, John Hyde, and Charles E. Howe; American Geographic Education, by W J McGee; Origin of the Physical Features of the Union States, by G. K. Gilbert; Geographic Work of the General Government, by Henry Gannett; Patagonia, by W J McGee; The Bitter Root Forest Reserve, by R. U. Goode; Lake Chelan, by Henry Gannett; The Geosphere, by W J McGee; Sumatra's West Coast, by D. G. Fairchild; The Five Civilized Tribes in the Survey of Indian Territory, by C. H. Fitch; Cloud Scenery of the High Plains, by Willard D. Johnson; Atlantic Coast Tides, by M. S. W. Jefferson.

Until January 1, 1900, each volume may be had for $1.50. To obtain any of the above mentioned articles, send 25 cents in stamps, indicating merely the title of the article desired.

107-108 Corcoran Building, Washington, D. C.

For an excellent description of the TRANSVAAL, of the BOERS and the UITLANDERS, send for number 11 of volume 7, NATIONAL GEOGRAPHIC MAGAZINE. A few only of the number remain unsold. By mail for 25 cents each.

For the most complete, authoritative, and attractive publications on the PHILIPPINES, send for the June, 1898, and February, 1899, numbers of THE NATIONAL GEOGRAPHIC MAGAZINE, containing numerous maps and illustrations. By mail for 25 cents each.

For a chart of the world, 48 by 30 inches, showing all CABLE AND OVERLAND TELEGRAPH LINES, and also COALING, DOCKING, AND REPAIRING STATIONS, with explanatory article, send for number 3 of volume 7, NATIONAL GEOGRAPHIC MAGAZINE. By mail for 25 cents.

JUDD & DETWEILER, PRINTERS, WASHINGTON, D. C.